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Should we continue using laparoscopy amid the COVID-19 pandemic?

Editor

COVID-19 has emerged as a major public health crisis that has spread rapidly around the world[1]. As the disease spreads at an alarming rate, pressure on healthcare facilities and critical care units has increased. To relieve the expected pressure on hospitals and preserve resources, it has been recommended that elective surgery be postponed[2]. However, emergency surgery cannot be postponed, even during a pandemic.

As the majority of acute abdominal conditions can be treated laparoscopically to reduce patient morbidity and expedite recovery, questions have been asked about the safety of the laparoscopic platform during a major respiratory pandemic. The possibility of SARS-CoV-2 spread via aerosols was reported in a recent experimental study[3], which concluded that the virus remained viable in aerosols for up to 3 h. Based on the study findings, airborne transmission of SARS-CoV-2 was assumed possible.

Exposure of the operating team to COVID-19-contaminated aerosol may occur after sudden release of trocar valves, via non-airtight exchange of instruments or by gas leak through the extraction incision site[4].

Despite the theoretical higher risk of exposure to COVID-19 during laparoscopic surgery, there remain doubts and questions regarding the magnitude of this risk. According to the WHO[5], airborne spread of SARS-CoV-2 is not the primary method of transmission. The main study upon which the assumption of airborne transmission of COVID-19 was proposed[3] generated aerosols using a high-powered machine, which differ from aerosols produced by a normal human cough[5].

Furthermore, Ong and colleagues[6] sampled air in the room and anteroom of three COVID-19 patients in airborne infection isolation rooms with 12 air exchanges per hour. Sampling was done on two separate days over an isolation period of 2 weeks. The presence of SARS-CoV2 in air samples was examined using reverse transcriptase–polymerase chain reaction (RT-PCR) targeting RNA-dependent RNA polymerase. All air samples were negative for SARS-COR2. Another study[7] detected SARS-CoV-2 in one of 13 environmental samples, but not in eight air samples collected at a distance of 10 cm from the patient's chin, with or without a surgical mask.

These studies, in addition to another WHO-documented analysis of 75 465 COVID-19 cases in China that did not report airborne transmission of SARS-CoV-2[5], cast doubt on the actual risk of airborne transmission of the virus during laparoscopic surgery.

Detection of SARS-CoV-2 RNA in smoke emitted by electrocautery or energy devices has not been confirmed. Providing clear evidence on the presence of the virus in the surgical plume warrants an experimental study using high-efficiency collectors to obtain surgical smoke in the form of hydrosol, which is then analysed by nested PCR as described previously for detection of hepatitis B virus in surgical smoke[4].

Finally, if laparoscopy is used amid the COVID-19 pandemic, several precautions should be taken, including the use of full personal protective equipment, minimizing the number of medical personnel, evacuation of smoke with suction devices, avoiding two-way pneumoperitoneum insufflators, and maintaining pneumoperitoneum pressure and ventilation at the lowest possible levels[4]. In addition, devices should be used to filter released CO_2 for aerosolized particles, such as PneumoClear smoke evacuation high-flow tube sets (Stryker Corp., Kalamazoo, Michigan, USA) and ConMed AirSeal® delivery system (ConMed, Utica, New York, USA).

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